ANSWER KEY

WLPCS
Geometry

Name: _____ Date: _____ Per.: _____

Zombie Review Game

16. If a polygon has eight sides, then it is an octagon.

17. If you live in a country that borders the United States, then you live in Canada.

18. If you play a sport with a ball and a bat, then you play baseball.

19. If an angle measures 80, then it is acute.

16.

Step 1: Is the conditional always, sometimes, or never true? Always

Step 2: If it is sometimes or never true, write a counterexample: N/A

Step 3: Write the converse: If a polygon (it) is an octagon, it has eight sides.

Step 4: Is the converse always, sometimes, or never true? Always

Step 5: If it is sometimes or never true, write a counterexample: N/A

Step 6: Write the inverse: If a polygon does not have eight sides, it is not an octagon.

Step 4: Is the inverse always, sometimes, or never true? Always

Step 5: If it is sometimes or never true, write a counterexample: N/A

16. If a polygon has eight sides, then it is an octagon.

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17.

Step 1: Is the conditional always, sometimes, or never true? Sometimes

Step 2: If it is sometimes or never true, write a counterexample: You may live in Mexico and still live in a country that borders the US.

Step 3: Write the converse: If you live in Canada, then you live in a country that borders the US.

Step 4: Is the converse always, sometimes, or never true? Always

Step 5: If it is sometimes or never true, write a counterexample: N/A

Step 6: Write the inverse: If you do not live in a country that borders the US, then you do not live in Canada.

Step 4: Is the inverse always, sometimes, or never true? Always

Step 5: If it is sometimes or never true, write a counterexample: N/A

16. If a polygon has eight sides, then it is an octagon.

17. If you live in a country that borders the United States, then you live in Canada.

18. If you play a sport with a ball and a bat, then you play baseball.

19. If an angle measures 80, then it is acute.

18.

Step 1: Is the conditional always, sometimes, or never true? Sometimes

Step 2: If it is sometimes or never true, write a counterexample: You may play softball or cricket, which both involve a bat and a ball.

Step 3: Write the converse: If you play baseball, then you play a sport with a bat and a ball.

Step 4: Is the converse always, sometimes, or never true? Always

Step 5: If it is sometimes or never true, write a counterexample: N/A

Step 6: Write the inverse: If you do not play a sport with a bat and a ball, then you do not play baseball.

Step 4: Is the inverse always, sometimes, or never true? Always

Step 5: If it is sometimes or never true, write a counterexample: N/A

16. If a polygon has eight sides, then it is an octagon.

17. If you live in a country that borders the United States, then you live in Canada.

18. If you play a sport with a ball and a bat, then you play baseball.

19. If an angle measures 80, then it is acute.

19.

Step 1: Is the conditional always, sometimes, or never true? Always

Step 2: If it is sometimes or never true, write a counterexample: N/A

Step 3: Write the converse: If an angle is acute, then it measures 80°.

Step 4: Is the converse always, sometimes, or never true? Sometimes

Step 5: If it is sometimes or never true, write a counterexample: An angle can be acute and measure something other than 80° (Ex: 65°, 10°, etc.)

Step 6: Write the inverse: If an angle does not measure 80°, then it is not acute.

Step 4: Is the inverse always, sometimes, or never true? Sometimes

Step 5: If it is sometimes or never true, write a counterexample: 70° is not 80° but it is acute.

Summary **Properties of Equality**

Addition Property	If $a = b$, then $a + c = b + c$.
Subtraction Property	If $a = b$, then $a - c = b - c$.
Multiplication Property	If $a = b$, then $a \cdot c = b \cdot c$.
Division Property	If $a = b$ and $c \neq 0$, then $\frac{a}{c} = \frac{b}{c}$.
Reflexive Property	$a = a$
Symmetric Property	If $a = b$, then $b = a$.
Transitive Property	If $a = b$ and $b = c$, then $a = c$.
Substitution Property	If $a = b$, then b can replace a in any expression.

1. **Given:** $2x + 3 = 12$
Prove: $x = \frac{9}{2}$

Statements	Reasons
1. $2x + 3 = 12$	1. Given
2. $2x = 9$	2. Subtraction Prop.
3. $x = \frac{9}{2}$	3. Division Prop.

2. **Given:** $x = 2$ and $y - 3x = 10$
Prove: $y = 16$

Statements	Reasons
1. $x = 2$	1. Given
2. $y - 3x = 10$	2. Given
3. $y - 3(2) = 10$	3. Substitution Prop.
4. $y - 6 = 10$	4. Simplify
5. $y = 16$	5. Addition Prop.

3.

Given: $3x + 12 = 8x - 18$
Prove: $x = 6$

Statements		Reasons
1.	$3x + 12 = 8x - 18$	1. Given
2.	$12 = 5x - 18$	2. Subtraction Prop.
3.	$30 = 5x$	3. Addition Prop.
4.	$6 = x$	4. Division Prop.
5.	$x = 6$	5. Symmetric Prop.

4. **Given**: $3k + 5 = 17$
Prove: $k = 4$

Statements	Reasons
1. $3k + 5 = 17$	1. Given
2. $3k = 12$	2. Subtraction Prop.
3. $k = 4$	3. Division Prop.
4.	4.
5.	5.

5. **Given:** $4(5x + 2) = 88$
Prove: $x = 4$

Statements	Reasons
1. $4(5x+2) = 88$	1. Given
2. $20x + 8 = 88$	2. Distributive Prop.
3. $20x = 80$	3. Subtraction Prop.
4. $x = 4$	4. Division Prop.
5.	5.

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6. **Given:** $2x + 7 = 5x - 14$
Prove: $x = 7$

Statements	Reasons
1. $2x + 7 = 5x - 14$	1. Given
2. $2x = 5x - 21$	2. Subtraction Prop.
3. $-3x = -21$	3. Subtraction Prop.
4. $x = 7$	4. Division Prop.
5.	5.

7. **Given:** $3(5x + 1) = 13x + 5$
Prove: $x = 1$

Statements	Reasons
1. $3(5x+1) = 13x + 5$	1. Given
2. $15x + 3 = 13x + 5$	2. Distributive Prop.
3. $2x + 3 = 5$	3. Subtraction Prop.
4. $2x = 2$	4. Subtraction Prop.
5. $x = 1$	5. Division Prop.

8. **Given:** $2(c - 4) + d = 0;\ d = 8$
Prove: $c = 0$

Statements	Reasons
1. $2(c-4) + d = 0$	1. Given
2. $d = 8$	2. Given
3. $2c - 8 + d = 0$	3. Distributive Prop.
4. $2c - 8 + 8 = 0$	4. Substitution Prop.
5. $2c = 0$	5. Simplify
6. $c = 0$	6. Division Prop.

1 $\overline{AB} + \overline{PQ} = \overline{CD} + \overline{RS}$

2 $AB + PQ = CD + RS$

3 $\measuredangle ABC + \measuredangle DEF = \measuredangle PQR$

4 $m\measuredangle ABC + m\measuredangle DEF = m\measuredangle PQR$

5 $\overline{AB} = \overline{CD}$

6 $AB = CD$ and $\overline{AB} \cong \overline{CD}$

7 $AB \cong CD$

8 $\overline{AB} \cong \overline{CD}$

9 $\measuredangle ABC = \measuredangle DEF$

10 $m\measuredangle ABC = m\measuredangle DEF$

11 $\measuredangle ABC \cong \measuredangle DEF$

Directions: State whether the notation used is correct or incorrect. Explain what you need to correct if the notation is incorrect.

1. Incorrect. The line segment symbol needs to be removed.
2. Correct.
3. Incorrect. The "m" needs to be added before each angle to indicate it is the measure of each angle.
4. Correct.
5. Incorrect. Either the line segment symbol needs to be removed OR the = needs to change to $\cong$.
6. Correct.
7. Incorrect. Either the line segment symbol needs to be added OR the $\cong$ needs to change to =.
8. Correct.
9. Incorrect. Either the "m" needs to be added before the angles OR the = needs to change to $\cong$.
10. Correct
11. Correct.

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Geometry

1. AB = 6, BC = 2*x*. If AC = 20, find the length of BC.

Step 1: Determine a relationship. Use the diagram! $AB + BC = AC$

Step 2: Write an equation that reflects the relationship: $6 + 2x = 20$

Step 3: Solve the equation.

$-6 \quad -6$

$\frac{2x}{2} = \frac{14}{2}$

$x = 7$

Step 4: Go back to the original problem. What do you need to do to answer the question? Do you need to substitute?

$BC = 2(7)$

$BC = 14$

$6 + 14 = 20$ ✓

2. AB = 4, BC = 3x – 12. If AC = 5x – 20, find the lengths of BC and AC.

Step 1: Determine a relationship. Use the diagram! $AB + BC = AC$

Step 2: Write an equation that reflects the relationship: $4 + 3x - 12 = 5x - 20$

Step 3: Solve the equation.

$3x - 8 = 5x - 20$

$+8 \quad +8$

$3x = 5x - 12$

$-5x \quad -5x$

$-2x = -12$ $\quad x = 6$

Step 4: Go back to the original problem. What do you need to do to answer the question? Do you need to substitute?

$BC = 3(6) - 12$

$18 - 12$

$BC = 6$

$AC = 5(6) - 20$

$30 - 20$

$AC = 10$

$4 + 6 = 10$ ✓

3. AM = 2x – 4 and AB = 24. Find the value of x.

M is the midpoint of AB.

Step 1: Determine a relationship. Use the diagram! $2(AM) = AB$ or $AM = \frac{1}{2}(AB)$

Step 2: Write an equation that reflects the relationship: $2(2x-4) = 24$ $\quad 2x-4 = \frac{1}{2}(24)$

Step 3: Solve the equation.

Same solution either way!

$4x - 8 = 24$
$+8 \quad +8$
$\frac{4x}{4} = \frac{32}{4}$
$x = 8$

$2x - 4 = 12$
$+4 \quad +4$
$\frac{2x}{2} = \frac{16}{2}$
$x = 8$

Step 4: Go back to the original problem. What do you need to do to answer the question? Do you need to substitute?

N/A but $AM = 2(8) - 4$
$16 - 4$
$AM = 12$ → This makes sense b/c M is the midpoint of AB, so AM should be half of AB (24)

4. AM = 36 and MB = 4x + 2. Find the value of x.

M is the midpoint of AB.

Step 1: Determine a relationship. Use the diagram! $AM = MB$

Step 2: Write an equation that reflects the relationship: $36 = 4x + 2$
$-2 \quad -2$

Step 3: Solve the equation.

$\frac{34}{4} = \frac{4x}{4}$
$8.5 = x$

Step 4: Go back to the original problem. What do you need to do to answer the question? Do you need to substitute?

N/A but $4(8.5) + 2 = MB$
$34 + 2$
$36 = MB$ → This makes sense b/c M is the midpoint of AB, so AM should be the same length as MB.

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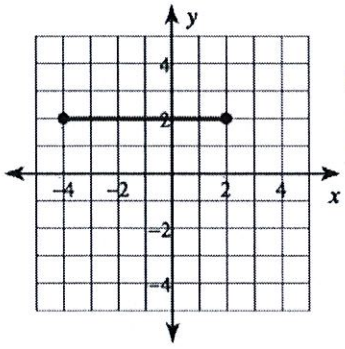
Geometry

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \qquad midpoint = \left(\frac{x_2+x_1}{2}, \frac{y_2+y_1}{2}\right)$$

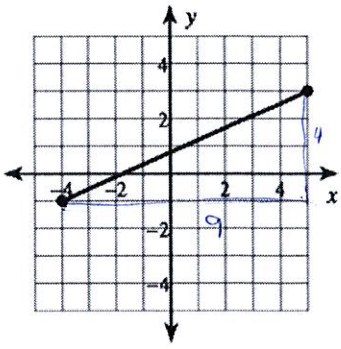
Find the midpoint between the two endpoints, then find the distance between the two endpoints.

3)



midpoint
(-1, 2)
distance
6

4)



midpoint
(0.5, 1)
distance
$\sqrt{97}$

Each set of ordered pairs is a set of endpoints. Find the midpoint and the distance between the endpoints.

11) (2, 4), (1, –3)
midpoint: (1.5, 0.5)
distance: $\sqrt{50}$

12) (–4, 4), (–2, 2)
midpoint: (-3, 3)
distance: $\sqrt{8}$

13) (5, 2), (–4, –3)
midpoint: (0.5, -0.5)
distance: $\sqrt{106}$

14) (–1, 1), (5, –5)
midpoint: (2, -2)
distance: $\sqrt{72}$

Directions: Identify each pair of angles as vertical angles or a linear pair. Solve for the variable.

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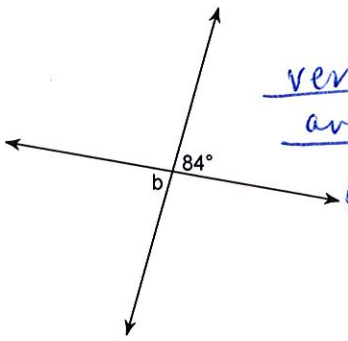
Geometry

Directions: Identify each pair of angles as vertical angles or a linear pair. Solve for the variable.

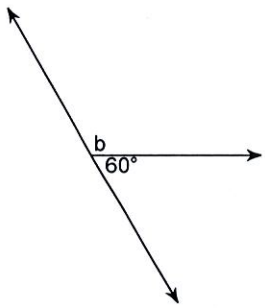
1)



vertical angles

$b = 84°$

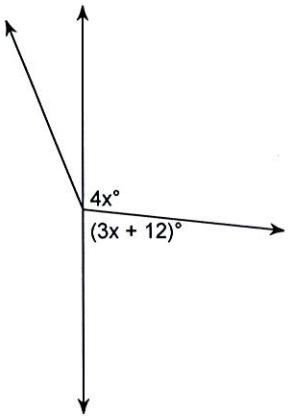
2)



linear pair

$b = 120°$

12)



linear pair

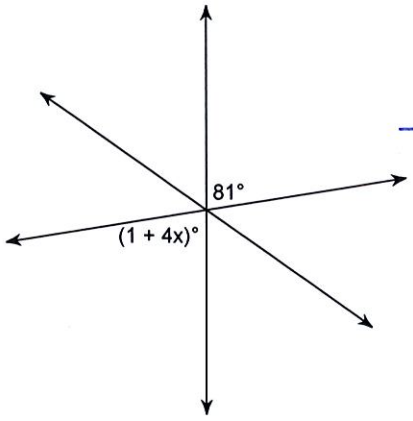
$4x + 3x + 12 = 180$

$-12 \quad -12$

$\frac{7x}{7} = \frac{168}{7}$

$x = 24$

14)



vertical angles

$1 + 4x = 81$

$-1 \quad -1$

$\frac{4x}{4} = \frac{80}{4}$

$x = 20$

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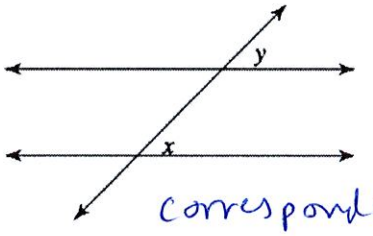
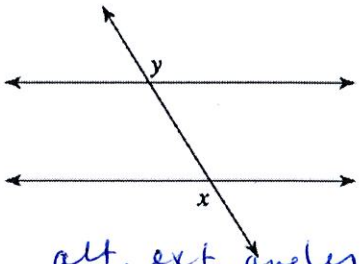
Directions: Identify each pair of angles as corresponding angles, alternate interior angles, alternate exterior angles, same side interior angles or same side exterior angles.

1)



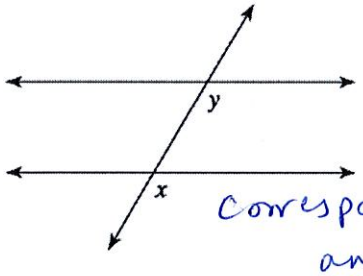
corresponding angles

2)



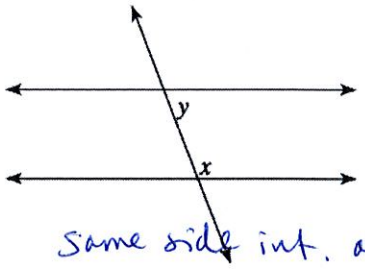
alt. ext. angles

3)



corresponding angles

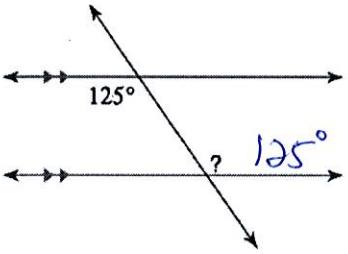
4)



same side int. angles

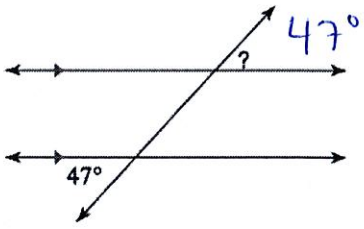
Directions: Find the measure of the indicated angle.

15)



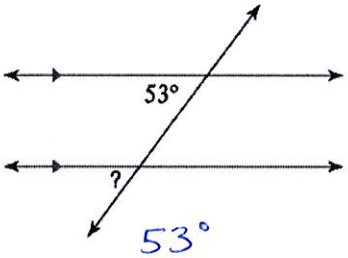
125°

16)



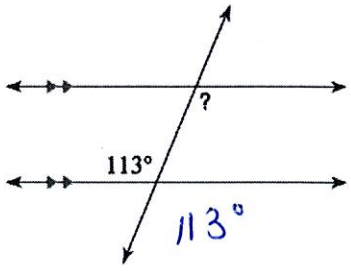
47°

17)



53°

18)



113°